IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Previously Presented) A patient infusion control apparatus for use in a magnetic resonance imaging apparatus to generate images of a patient, the patient infusion control apparatus comprising:

a) means for injecting fluid into the patient undergoing a MRI procedure;

b) an electric drive motor and motor control circuitry positioned remotely from the means for injecting to be substantially non-reactive with an electromagnetic field of the imaging apparatus; [and,]

c) a non-rigid drive connection between the electric drive motor and the means for injecting comprising a flexible drive shaft; and

d) at least one battery for powering the motor control circuitry and the electric drive motor and for minimizing electromagnetic interference with the magnetic resonance imaging apparatus.

2. (Original) The patient infusion control apparatus of claim 1 wherein the electric drive motor and motor control circuitry are enclosed within electromagnetic shielding.

3. (Original) The patient infusion control apparatus of claim 1, wherein the patient injection means is adapted to be located in close proximity to the patient.

4. (Original) The patient infusion control apparatus of claim 1, wherein said flexible drive shaft is comprised of hard brass.

5. (Original) The patient infusion control apparatus of claim 1, wherein the motor is positioned at least ten to fifteen feet from the patient injection means.

6. (Original) The patient infusion control apparatus of claim 1, wherein the electric drive motor and the motor control circuitry are enclosed in an electromagnetic shield.

7. (Previously Presented) The patient infusion control apparatus of claim 1[, further comprising] wherein the at least one battery comprises a rechargeable battery [wherein the electronic drive motor receives power from the rechargeable battery].

8. (Original) A patient infusion system for use with a magnetic resonance imaging system, the patient infusion system comprising:

a) a room shielded from electromagnetic interference;

b) a system controller located externally of the shielded room;

c) a patient infusion apparatus including infusion apparatus control means for controlling an infusion operation, the patient infusion apparatus located within the shielded room; and,

d) a fiber optic communications link between the system controller and the infusion apparatus control means.

9. (Currently Amended) A patient infusion system for use with a magnetic resonance imaging system, the patient infusion system comprising:

a) a room shielded from electromagnetic interference, which includes a viewing window;

b) a system controller external to the shielded room;

c) a patient infusion apparatus within the shielded room and including infusion apparatus control means for controlling an infusion operation; [and,]

d) a communicating control link between the system controller and the infusion apparatus control means, wherein the communicating control link is adapted to be substantially non-reactive with the magnetic resonance imaging system; and

e) a power source operably connected at least to the patient infusion apparatus to provide power thereto.

10. (Original) The patient infusion system of claim 9, wherein the communications link includes means for transmitting and receiving electromagnetic radiation through the viewing window.

11. (Original) The patient infusion system of claim 9, wherein the communications link includes means for transmitting and receiving infrared electromagnetic energy.

12. (Original) The patient infusion system of claim 9, wherein the communications link includes means for transmitting and receiving electromagnetic energy in the visual range.

13. (Original) A patient infusion system for use with a magnetic resonance imaging system to generate images of a patient, the patient infusion system comprising:

a) a room shielded from electromagnetic interference by an electromagnetic shield including a viewing window;

b) a system controller located outside the room;

c) a patient infusion apparatus located inside the room including infusion

apparatus control means for controlling an infusion operation;

d) a communications link between the system controller and the infusion apparatus control means; and,

e) an electric drive motor and motor control circuitry separated from the patient infusion apparatus and a non-rigid drive connection between the electric drive motor and the patient infusion apparatus whereby the motor is positioned to be substantially non-reactive with an electromagnetic field of the imaging system.

14. (Original) The patient infusion system of claim 13, wherein the communications link comprises an external transceiver located outside the room and an internal transceiver located inside the room, both said transceivers communicating electromagnetic energy through the viewing window in the room.

15. (Original) The patient infusion system of claim 14, wherein the electromagnetic energy communicated between said transceivers is in the visible light spectrum.

16. (Original) The patient infusion system of claim 14, wherein said electromagnetic energy communicated between said transceivers is in the infrared spectrum.

17. (Original) The patient infusion system of claim 13, further comprising a rechargeable battery located in the room and connected to the electric drive motor for providing power to the electric drive motor.

18. (Original) The patient infusion system of claim 13, wherein the electric drive motor and motor control circuitry are enclosed within the electromagnetic shield.

19. (Original) The patient infusion system of claim 13, wherein the infusion apparatus control means is adapted to be located at least ten to fifteen feet from the patient.

20. (Original) The patient infusion system of claim 13, wherein the non-rigid drive connection is comprised of hard brass.

21. (Original) The patient infusion system of claim 13, wherein the patient infusion apparatus is adapted to be located in close proximity to the patient.

22. (Previously Presented) A method of patient infusion for use with a magnetic resonance imaging system, the method comprising the steps of:

a) providing patient infusion apparatus having a patient infusion apparatus controller and means operable to inject fluid into a patient;

b) positioning the patient infusion apparatus controller away from the patient infusion apparatus to prevent interference in the image, the infusion apparatus controller including at least one electric motor and motor control circuitry, at least one battery for powering the motor control circuitry and the at least one motor and for minimizing electromagnetic interference with the magnetic resonance imaging system and the motor control circuitry; and

c) operably connecting the electric motor for controlling the patient infusion apparatus to the patient infusion apparatus with a non-rigid drive connection, the electric motor operating the patient infusion apparatus to infuse media into a patient.

23. (Original) A method of patient infusion for use with a magnetic resonance

imaging system, the method comprising the steps of:

a) providing a room shielded from electromagnetic interference including a viewing window;

b) providing a system controller located outside the room;

c) providing a patient infusion apparatus including infusion apparatus control means for controlling an infusion operation, the patient infusion apparatus located inside the room; and

d) transmitting control signals from the system controller to the infusion apparatus control means through the viewing window.

24. (Previously Presented) A method of patient infusion for use with a magnetic resonance imaging system, the method comprising:

providing an infusion apparatus positioned within a room shielded from electromagnetic interference, the infusion apparatus comprising an injector for injecting fluid into patients during magnetic resonance imaging procedures and at least one battery for powering control circuitry and a drive mechanism of the injector and for minimizing electromagnetic interference with the magnetic resonance imaging system;

energizing the injector to inject fluid into one or more patients until the charge of the battery is substantially depleted; and

replacing the substantially depleted battery with a charged battery to energize the injector.

25. (Previously Presented) The method of claim 24, further comprising:

providing a system controller positioned external to the shielded room and in communication with the infusion apparatus for controlling the operation thereof, the system

controller comprising a battery charger for charging batteries substantially depleted of charge by the injector.

26. (Previously Presented) A patient infusion system for use with a magnetic resonance imaging system, the patient infusion system comprising:

an infusion apparatus positioned within a room shielded from electromagnetic interference, the infusion apparatus operable to inject fluid into a patient during a magnetic resonance imaging procedure;

a battery for powering the infusion apparatus without substantial interference with the magnetic resonance imaging system; and

a system controller positioned external to the shielded room and in communication with the infusion apparatus for controlling the operation thereof.

27. (Previously Presented) The patient infusion sysem of claim 26 wherein the battery is rechargeable.

28. (Previously Presented) The patient infusion system of claim 26 wherein the system controller comprises a battery charger for recharging batteries depleted of charge by the injector.

29. (Previously Presented) The patient infusion system of claim 26 wherein the infusion apparatus comprises an injector and a control unit.

30. (Previously Presented) The patient infusion system of claim 29 wherein the injector and the control unit are separate units.

31. (Previously Presented) The patient infusion system of claim 30 wherein the injector and the control unit are connected by a non-rigid drive connection.

32. (Previously Presented) The patient infusion system of claim 30 wherein the control unit is remotely positioned from the injector.

33. (Previously Presented) The patient infusion system of claim 26 wherein the infusion apparatus is adapted to accommodate at least two syringes mounted thereon.

34. (Previously Presented) The patient infusion system of claim 26 wherein the infusion apparatus and the system controller communicate with each other by means of a communication link disposed therebetween.

35. (Previously Presented) The patient infusion system of claim 34 wherein the communication link is adapted to be substantially non-reactive with the magnetic field of the imaging system.

36. (Previously Presented) The patient infusion system of claim 34 wherein the communication link comprises a fiber optic line.

37. (Previously Presented) The patient infusion system of claim 34 wherein the communication link comprises means for transmitting and receiving electromagnetic energy through a window in the shielded room.

38. (Previously Presented) The patient infusion system of claim 37 wherein the electromagnetic energy comprises infrared electromagnetic energy.

39. (Previously Presented) The patient infusion system of claim 37 wherein the electromagnetic energy comprises electromagnetic energy in the visual range.

40. (Previously Presented) The patient infusion system of claim 34 wherein the communication link comprises means for transmitting and receiving electromagnetic energy.

41. (Previously Presented) The patient infusion system of claim 40 wherein the electromagnetic energy comprises infrared electromagnetic energy.

42. (Previously Presented) The patient infusion system of claim 40 wherein the electromagnetic energy comprises electromagnetic energy in the visual range.

43. (Previously Presented) The patient infusion system of claim 26, further comprising a battery charger positioned external to the shielded room for recharging batteries depleted of charge by the injector.

44. (Previously Presented) The patient infusion system of claim 43 wherein the battery charger is operably associated with the system controller.

45. (Previously Presented) A patient infusion system for use with a magnetic resonance imaging system, the patient infusion system comprising:

an infusion apparatus positioned within a room shielded from electromagnetic interference, the infusion apparatus operable to inject fluid into a patient during a magnetic resonance imaging procedure;

at least one battery for powering the infusion apparatus without substantial interference with the magnetic resonance imaging system;

a system controller positioned external to the shielded room and in communication with the infusion apparatus for controlling the operation thereof; and

a battery charger positioned external to the shielded room for recharging batteries depleted of charge by the injector.

46. (Previously Presented) The patient infusion system of claim 45 wherein the battery charger is operably associated with the system controller.

47. (Previously Presented) The patient infusion system of claim 45 wherein the at least one battery is rechargeable.

48. (Previously Presented) The patient infusion system of claim 45 wherein the infusion apparatus comprises an injector and a control unit.

49. (Previously Presented) The patient infusion system of claim 48 wherein the injector and the control unit are separate units.

50. (Previously Presented) The patient infusion system of claim 49 wherein the injector and the control unit are connected by a non-rigid drive connection.

51. (Previously Presented) The patient infusion system of claim 49 wherein the control unit is remotely positioned from the injector.

52. (Previously Presented) The patient infusion system of claim 45 wherein the infusion apparatus is adapted to accommodate at least two syringes mounted thereon.

53. (Previously Presented) The patient infusion system of claim 45 wherein the infusion apparatus and the system controller communicate with each other by means of a communication link disposed therebetween.

54. (Previously Presented) The patient infusion system of claim 53 wherein the communication link is adapted to be substantially non-reactive with the magnetic field of the imaging system.

55. (Previously Presented) The patient infusion system of claim 53 wherein the communication link comprises a fiber optic line.

56. (Previously Presented) The patient infusion system of claim 53 wherein the communication link comprises means for transmitting and receiving electromagnetic energy through a window in the shielded room.

57. (Previously Presented) The patient infusion system of claim 56 wherein the electromagnetic energy comprises infrared electromagnetic energy.

58. (Previously Presented) The patient infusion system of claim 56 wherein the electromagnetic energy comprises electromagnetic energy in the visual range.

59. (Previously Presented) The patient infusion system of claim 53 wherein the communication link comprises means for transmitting and receiving electromagnetic energy.

60. (Previously Presented) The patient infusion system of claim 59 wherein the electromagnetic energy comprises infrared electromagnetic energy.

61. (Previously Presented) The patient infusion system of claim 59 wherein the electromagnetic energy comprises electromagnetic energy in the visual range.

62. (Previously Presented) The patient infusion system of claim 52 wherein the at least two syringes are operably engaged with at least one drive mechanism of the infusion apparatus.

63. (Previously Presented) A patient infusion system for use with a magnetic resonance imaging system, the patient infusion system comprising:

an infusion apparatus positioned within a room shielded from electromagnetic interference, the infusion apparatus comprising

an injector comprising two piston drive units, each of the piston drive units adapted to engage a syringe mounted on the injector for injecting fluid into a patient during a magnetic resonance imaging procedure; and

an injection control unit operably associated with the injector; and

a display unit positioned external to the shielded room and in communication with the infusion apparatus.

64. (Previously Presented) The patient infusion system of claim 63, wherein the injection control unit comprises a battery for powering the injector.

65. (Previously Presented) The patient infusion system of claim 63, wherein the injection control unit is remotely positioned from the injector.

66. (Previously Presented) The patient infusion system of claim 65, wherein the injector and the injection control unit are connected by a non-rigid drive connection.

67. (Previously Presented) The patient infusion system of claim 63, wherein the infusion apparatus and the display unit communicate with each other by means of a communication link disposed therebetween.

68. (Previously Presented) The patient infusion system of claim 67, wherein the communication link comprises a fiber optic line.

69. (Previously Presented) The patient infusion system of claim 67, wherein the communication link comprises means for transmitting and receiving electromagnetic radiation through a window in the shielded room.

70. (Previously Presented) A patient infusion system for use with a magnetic resonance imaging system, the patient infusion system comprising:

an infusion apparatus positioned within a room shielded from electromagnetic interference, the infusion apparatus comprising

an injector comprising two piston drive units, each of the piston drive units adapted to engage a syringe mounted on the injector for injecting fluid into a patient during a magnetic resonance imaging procedure; and

an injection control unit operably associated with the injector; and

a controller in communication with the infusion apparatus to control the operation thereof.

71. (Previously Presented) The patient infusion system of claim 70, wherein the injection control unit comprises a battery for powering the injector.

72. (Previously Presented) The patient infusion system of claim 70, wherein the injection control unit is remotely positioned from the injector.

73. (Previously Presented) The patient infusion system of claim 72, wherein the injector and the injection control unit are connected by a non-rigid drive connection.

74. (Previously Presented) The patient infusion system of claim 70, wherein the controller is positioned at least in part within the room shielded from electromagnetic interference.

75. (Previously Presented) The patient infusion system of claim 74, wherein the controller comprises at least a system controller and the injection control unit.

76. (Previously Presented) The patient infusion system of claim 75, wherein the controller relies at least in part for its communication with the infusion apparatus via a communication link.

77. (Previously Presented) The patient infusion system of claim 74, wherein the communication link comprises a fiber optic line.

78. (Previously Presented) The patient infusion system of claim 74, wherein the communication link comprises means for transmitting and receiving electromagnetic radiation through a window in the shielded room.

79. (New) The patient infusion system of claim 8, further comprising:

a power source operably connected at least to the patient infusion apparatus to provide power thereto.

80. (New) The patient infusion system of claim 79, wherein the power source comprises at least one battery.

81. (New) The patient infusion system of claim 80, wherein the battery is rechargeable.

82. (New) The patient infusion system of claim 9, wherein the power source comprises at least one battery.

83. (New) The patient infusion system of claim 82, wherein the battery is rechargeable.

84. (New) The patient infusion system of claim 13, further comprising:

a power source operably connected at least to the electric drive motor to provide power thereto.

85. (New) The patient infusion system of claim 84, wherein the power source comprises a battery.

86. (New) The patient infusion system of claim 85, wherein the battery is rechargeable.

87. (New) The method of claim 22, further comprising:

operatively connecting the electric motor to a power source.

88. (New) The method of claim 87, wherein the power source comprises at least one battery.

89. (New) The method of claim 88, wherein the battery is rechargeable.

90. (New) The method of claim 23, further comprising:

operably connecting the patient infusion apparatus to a power source.

91. (New) The method of claim 90, wherein the power source comprises at least one battery.

92. (New) The method of claim 91, wherein the battery is rechargeable.

93. (New) The patient infusion system of claim 63, further comprising:

a power source operably connected at least to the injection control unit to provide power thereto.

94. (New) The patient infusion system of claim 93, wherein the power source comprises at least one battery.

95. (New) The patient infusion system of claim 94, wherein the battery is rechargeable.

96. (New) The patient infusion system of claim 70, further comprising:

a power source operably connected at least to the injection control unit to provide power thereto.

97. (New) The patient infusion system of claim 96, wherein the power source comprises at least one battery.

98. (New) The patient infusion system of claim 97, wherein the battery is rechargeable.

99. (New) A patient infusion system for use with a magnetic resonance imaging system comprising a room shielded from electromagnetic interference and a control room, the patient infusion system comprising:

a first control unit positioned within the control room;

an infusion apparatus positioned within the shielded room, the infusion apparatus comprising:

an injector for injecting fluid into a patient during a magnetic resonance imaging procedure; and

a second control unit operably connected to the injector;

a control link between the first control unit and the second control unit, the control link adapted to be substantially non-reactive with the magnetic resonance imaging system; and

a power source operably connected to the infusion apparatus.

100. (New) The patient infusion system of claim 99, wherein the injector is adapted to accommodate two syringes mounted thereon for injecting fluid into a patient.

101. (New) The patient infusion system of claim 99, wherein the power source comprises at least one battery.

102. (New) The patient infusion system of claim 101, further comprising:

a battery charger positioned within the control room.

103. (New) The patient infusion system of claim 99, wherein the control link comprises a fiber optic link.

104. (New) The patient infusion system of claim 99, wherein the second control unit comprises at least one motor.

105. (New) The patient infusion system of claim 99, wherein the second control unit is shielded to prevent interference with the magnetic resonance imaging system.

106. (New) A patient infusion system for use with a magnetic resonance imaging system to generate images of a patient, the patient infusion system comprising:

a) a room shielded from electromagnetic interference by an electromagnetic shield including a viewing window;

b) a system controller located outside the room;

c) a patient infusion apparatus located inside the room including infusion apparatus control means for controlling an infusion operation;

d) a communications link between the system controller and the infusion apparatus control means; and,

e) an electric drive motor and motor control circuitry separated from the patient infusion apparatus and a non-rigid drive connection between the electric drive motor and the patient infusion apparatus whereby the motor is positioned to be substantially non-reactive with the imaging system.

107. (New) The patient infusion system of claim 106, wherein the communications link comprises an external transceiver located outside the room and an internal transceiver located inside the room, both said transceivers communicating electromagnetic energy through the viewing window in the room.

108. (New) The patient infusion system of claim 107, wherein the electromagnetic energy communicated between said transceivers is in the visible light spectrum.

109. (New) The patient infusion system of claim 107, wherein said electromagnetic energy communicated between said transceivers is in the infrared spectrum.

110. (New) The patient infusion system of claim 106, further comprising a rechargeable battery located in the room and connected to the electric drive motor for providing power to the electric drive motor.

111. (New) The patient infusion system of claim 106, wherein the electric drive motor and motor control circuitry are enclosed within the electromagnetic shield.

112. (New) The patient infusion system of claim 106, wherein the infusion apparatus control means is adapted to be located at least ten to fifteen feet from the patient.

113. (New) The patient infusion system of claim 106, wherein the non-rigid drive connection is comprised of hard brass.

114. (New) The patient infusion system of claim 106, wherein the patient infusion apparatus is adapted to be located in close proximity to the patient.

115. (New) The patient infusion system of claim 34, wherein the communication link is adapted to be substantially non-reactive with the imaging system.

116. (New) The patient infusion system of claim 53, wherein the communication link is adapted to be substantially non-reactive with the imaging system.